

The Advent of Us: How We Became Human

A sermon by Rev. Steven Epperson

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Several weeks ago, in our “Encountering Our Ancestors,” Jane Slemon did a wonderful job of bringing activist, singer songwriter Malvina Reynolds to life. One of Malvina’s songs is printed in our hymnbooks; and we sing it on occasion. It begins: “O what a piece of work we are, how marvelously wrought; the quick contrivance of the hand, the wonder of our thought...” This lyric echoes Hamlet’s soliloquy; from Act II, scene two, where we hear these words: ‘What a piece of work is a man! How noble in reason, how infinite in faculty!

Trying to make sense of the improbable appearance, the rise of humankind across times and landscapes unimaginably old, trying to depict some momentous act where we were endowed with unique attributes has fired the creative imaginations of human beings for thousands of years. Artists, poets, prophets, filmmakers and a whole lot of the rest of us have resorted to mythic beings, the supernatural and the influence of space aliens to explain our origins and advent as a distinctive species. *(third page order of service)*

And it is extraordinary—that bundle of unique human traits. All species are unique in their own way and are meant to flourish in their kind and habitat. While it is absolutely the case that other animal species can solve problems and communicate with each other, it seems that we are unusual in that we can self-consciously think about nature and our place in it; we can imagine the inner lives and intentions and motivations of others, as well as our own in the past, present and future; and we use symbols, language, arts and technologies to re-create the world mentally, physically and to contemplate and achieve endless new realities. Although (and heaven knows)

we haven't lost our selfish and violent motivations, symbolic consciousness gives us the capacity for spirituality and a shared sense of empathy and morality.

Human beings have long communicated with each other through articulate language. To be sure, animals make and understand gestures that have meaning. But do they have the capacity to combine symbols that can generate potentially unlimited meaning? Think about it: we have devised and express words not only to name *objects*, but to represent tens of thousands of abstract *concepts* that can help us think far beyond the here and now. We can discuss past, present and future, and of things and worlds that exist only in our imagination—from Tommy Douglas's "Mouseland" speech to the *Bhagavad Gita* to Shakespeare to "Breaking Bad," "the Walking Dead," and *The Game of Thrones*. By connecting words into sentences, our languages can express an unlimited number of ideas from a limited set of words—of anything we can imagine.

Think about art. While many animals create patterns and structures that inspire our wonder and appreciation—remember the glorious early morning, dew spangled spider webs a month ago?—art entails the creatively conscious *intention* to express oneself. And here, I don't think we're talking about webs or nests, or endlessly repeated hexagonal cells in beehives. Art stirs us; it moves the artist and viewer not only by functional or formal qualities but also, and perhaps especially, by the way it reaches out to express the inner life of creator and viewer—their beliefs, their aspirations, their rage, their thirst for beauty and solace. It's that intention, that revelation of interiority and creativity that inspires and connects us in ways that appear distinctive to our human family. Though we do not know the meaning of the pre-historic art printed in the order of service—we can feel and connect with it though it was created 35,000

years ago—in the beautiful rendering of animals Chauvet Cave and 12,000 years ago in the “Cave of Hands” in Argentina—we see something, *some ones*, profoundly like us staring back and reaching out to us from those walls.

The same thing can be said for music. Animals produce all kinds of music—the rhythmic beats and tones, scales and tunes of birds, whales and other creatures have long inspired our own musical language. But again, the question of intent and the creative combination of all these musical forms in near inexhaustible variety and complexity, the pairing of music with voice, other instruments and other art forms like dance for cultural, religious and aesthetic purposes—to instill an event and those listening and performing it with emotion, shared feeling and meaning—this this too seems distinctive to what it means to be human.

And then a word about complex tools and technology: Tools making is not unique to us; it’s the way we use them that stands out. Our capacity for symbolic thought helps us to design tools and technologies that serve long-range plans, for good and ill. More than just an extension of our bodies, our tools form vast systems that perform tasks far beyond what one person can do. The technologies involved in creating tools is so complex; it begins with a tool maker who can envision the form of the finished tool and its use before the process begins and then involves so many stages of forward planning, and step-by-step execution that it could only have been imagined and carried out by minds capable of abstracting and visualizing long chains of cause and effect and achievable outcomes. (Tattersall, 141, 202)

In sum, music, art, language and technology are some of the ways we shape our surroundings and define who we are. Although they vary over time and across cultures, these

human expressions exemplify the profoundly creative, inventive, meaning-seeking spirit shared by all human beings.

Other creatures live in a world more or less as Nature presents it to them; they react to it more or less immediately and directly—in stunningly beautiful and complex ways, to be sure; and a blessing on them. In contrast, we live to a significant degree in the world our brains can re-imagine and remake—and this symbolic capacity of ours allows us to create in our heads alternative worlds and futures for ourselves—worlds that can be malign and filled with sadness and well as futures and lives expressive of empathy, creativity and kindness that are the very basis of the cultural variety that is so much a hallmark of our species.

(The preceding paragraphs about language, arts, music and technologies draw from the extraordinary exhibit in the “Hall of Human Origins” at the American Museum of Natural History in New York City, curated by Ian Tattersall. A far more detailed examination can be found in Tattersall, *Masters of the Planet: The Search for Our Human Origins*, 2012.)

But here’s the questions looming over all this: where and how did all this take place?

How can we explain the advent of us? How did we become humans?

Well, the first and most sweeping way to explain it is *evolution*—that profound, relentless, unceasing urge of all organic things, over immense and abrupt periods of time to reproduce, survive, and adapt to whatever niche, whatever environment nature affords life and its myriad kinds to exist and flourish. Those settings are almost inexhaustible and mindboggling diverse—from the inner sanctums of the cell’s nucleus, to volcanic vents in the inmost depths of the ocean, from the skies above where eagles take wing to an earthen hut made by human hands in a remote desert where a mother is giving birth to her child.

The mechanisms driving and nudging all this surging life—from viruses to human beings—down its near infinite pathways and expressions, the mechanisms for evolving life are genetic mutation or variation, natural selection and genetic drift. Because of genetic variation and the

fact that some individuals survive to pass traits to future generations, populations of organisms evolve—these variations arise from random changes in the DNA an individual inherits that may impact its ability to survive and reproduce. An individual with inherited features that enables it to cope better with its environment tends to pass them to the next generation. Over time, a population of individuals will display more of these better adapted features and pass them along—that’s natural selection. And genetic drift refers to what happens in small populations where these specific genes and traits increase in abundance and concentration. (see *Spitzer Hall of Human Origins*:

Educator’s Guide, education.amnh.org/humanorigins)

Think about seals—their remote ancestors once lived exclusively near the seas but on dry ground and they ambled about on short legs and hands. Over enormous stretches of time, but with cell replication and mutations taking place constantly and generations turning over in a matter of a few short years—what happened? It became more profitable for them—in terms of reproduction, exploitation of food resources and survival—to shed their legs, acquire flippers, aerodynamic beauty and grace in the water, and return, most of the time, to the oceans.

12 million years ago, the continent of Africa was truly a planet of the apes: warm, moist and densely forested and home to more than 20 genera of now extinct apes—that’s a lot of different species. Then an enormous climatic change occurred. Remember plate tectonics? All land masses are in motion: lumbering over the oceans, subducting, ramming, piling, splitting off, hooking up—well, millions of years ago the North and South American continents linked up, blocking the circulation into the Atlantic Ocean of warm Pacific waters which resulted in a cooling and drying trend in Africa, and initiating the cycles of Ice Ages in Northern Hemispheres.

The unending tropic forest home of ancient primates began to break up; woodlands and open stretches of grassland appeared and with them, myriad new families of mammals arose. And with them, groups of primates acquiring and passing traits down along through the generations that enabled them to move out of the forests to take advantage of these new habitats and sources of food. That meant emergent and novel anatomies and behaviours undergoing incremental but enormous changes between 6-2 ½ million years ago. The fossil evidence is compelling. Cranial sizes grew while upper canine teeth—huge and sharp in apes—began to reduce in size. Leg lengths increased, and leg bone angles and foot configurations altered by about 4 million years ago to accommodate upright, in-line walking on two, rather than four limbs, while these early hominids also began to shed thick, all-over body hair.

Erect posture carried on two legs and body hair loss were crucial for something as simple but profound as heat regulation. Upright walking reduces the area of the body receiving heat from the sun and from the ground, while maximizing the skin area able to radiate and expire body heat. So instead of having to rest in the shade and pant to cool off after a burst of exertion, hominid ancestors benefited from cooling effects of the wind, reduced body exposure to the sun, and thus could cover far more territory as pedestrians than other four legged mammals.

And beginning about 2.5 million years ago and continuing in fits and starts thereafter, that's exactly what they did; set off on foot in small hunting bands in search of food, shelter, water and raw materials for tool production used for hunting and carving up animal prey.

Hominids ancestors first left Africa about 2 million years ago. Travelling up from the Great Rift Valley some journeyed into the Middle East and the Caucasus. Others hung to the Coasts of Southern Asia and spread out into Southeast and East Asia. They carry species names

today like *homo erectus* and *homo ergaster*: standing man, working man. And if they expanded their living and hunting range by only ten miles in a generation, this would add up to more than 1500 miles in a mere 2,500 years—a mere blink of the eye in time scales we’re working with.

(Tattersall, 197)

I’m not talking about humans, not us, and not yet—these were ancient, non-linguistic, non-symbolic creatures. The high placement of their larynxes would have made articulate speech impossible. They left no identifiable traces of symbolic culture—no burial sites, no art of any kind. And almost more like bees than us, the few crude tools they did create were repeated in form and style almost without variation for nearly two million years.

The *fossil and archaeological record* shows that hominids have a past that is long and diverse. It is made up of at least twenty different species. And unlike the neat diagram of “Homersapien” printed in the order of service, hominid evolution did not proceed as a single line of sequential species, nor did it progress toward some preordained goal from “monkius eatalotis” to “homersapien.”—in spite of what Homer Simpson may flatter himself to think.

Rather, new species diverge from common ancestors like branches on a tree or bush—and that evolutionary tree of life diagram below depicts relatedness between species living and extinct, and simultaneous, sometimes overlapping existence. Some, like *homo erectus*, survived much longer than the 150,000 years that *homo sapiens* has existed. But you can also see from this diagram following it from bottom to top that, in spite of the score or more species of our remote ancestors that preceded us all of them—except us—went extinct.

Sometime around 200,000 years ago, a species anatomically recognizable as *homo sapiens* appears for the first time. Scientists are confident that Africa was the continent of our birth—the earliest fossils of our direct ancestors are found there, and numerous DNA

comparisons of modern human populations have made it clear that they all converge back to an African ancestry and to a population that numbered no more than 10,000 individuals. We are all descendents of that group that began the long story of migration out of Africa beginning about 75,000 years ago: people who looked like us, who created decorative shell and beadwork, invented complex new tools through delicate techniques of pressure flaking and the heating and cooling of tools to produce sharp durable cutting edges. They engraved symbol drenched, complex geometric signs onto plaques of stone, bone and antler that they valued and carried with them on their journeys. And in a burst of unprecedented creativity about 35,000 years ago, they began to draw and colour images of their natural and mythic worlds in caves and stone grottoes that have been preserved and astonish us today with their accuracy and solemn beauty. (Tattersall, 185, 202-5) How did this happen?

The changeover of *homo sapiens* from a non-symbolic, non-linguistic species to a symbolic, linguistic one has been described as the “most-mind boggling cognitive transformation that has ever happened to any organism;” and even the most clear-eyed, hard-headed scientists refer to it as a “miracle.” (Tattersall, 220, 209) Just how the human brain put everything together into what we think and feel and can express is still largely unknown. But we do know that all the material was there for it to happen: a modern human anatomy, the innate urge to communicate in complex ways, and a society of others that already possessed systems of communication that used sounds, gestures and body language.

Imagine an arch: stone-by-stone it rises and curves in; but an arch isn't an arch until a keystone is found and secured in place at the summit. Some genetic accident occurred that set the keystone in place—the keystone of language—a novel neural configuration, a change in the

internal organization and wiring of the brain, released by some kind of cultural stimulus and urge with hugely ramifying consequences that cascaded out and down through the generations of our remote, direct ancestors. That event and its consequences enabled our direct human ancestors to cope better with their environments, survive, reproduce and flourish in that ancient world. I like to think that it happened as a mother cooed, babbled, and found words to name objects to entertain an infant. Or that the first language arose and was invented by kids—those curious creatures so receptive to new ideas, who've always had their own ways of doing things, and who communicate among themselves in ways that often deliberately mystify their parents.

Something like this actually happened back in the 1980s in Nicaragua when that nation first established a school for the deaf. Children who had formerly been isolated at home among speaking relatives who did not sign, once brought together in that school formed their own community and rapidly and independently created a signed language uniquely their own that quickly developed many of the complexities of spoken language though it bore no relation to the Spanish that was spoken around them. In another instance, a twenty-seven year old deaf man who not only could not sign, but did not grasp that people used names to denote objects, achieved a breakthrough with a gifted sign-language instructor. In a flash of insight, he understood for the first time that everything had a name. And “suddenly,” according to the account written about this incident, “he sat up straight and rigid...The whites of his eyes expanded, as if in terror...He broke through...He had entered the universe of humanity and discovered the communion of minds.”

A final example, and I bring these remarks to a close. At the age of thirty-seven, a neuroanatomist named Jill Bolte Taylor suffered a massive stroke that deprived her of language,

and as a consequence all her memories disappeared and she found herself able to live only in the present. On the other hand, she also felt a sense of peace, and of unaccustomed connectedness to the world around her. Recounted after a full recovery, it seems that her previous command of language compelled her to distance herself from her surroundings which, it appears, is the perhaps tragic essence of our human symbolic gift—we can stand apart and think about nature and our place in it; we can imagine the inner lives and intentions and motivations of others, as well as our own in the past, present and future; and we use symbols, language, arts and technologies to re-create the world mentally, physically and to contemplate and achieve endless new realities. (see Tattersall, 216-19)

I did not learn this story of the advent of us, of how we became human, in church or in my schools growing up. It's a pity; but then, the learning of it now, later in life has been, for me, an unexpected and welcome pleasure. It has given me something like a new advent story reaching back into the past millions of years, across vast landscapes of time and place and deepened my delight and wonder in the miracle and meaning of being part of the human family.

Advent services 2002-13

2002 Evolution

2003 Birth of the Moon

2004 Life from the Seas

2005 Plate Tectonics

2006 Size of the Universe/Sea of Knowledge

2007 Cell: Smallest Living Thing

2008 Atom

2009 Photosynthesis

2010 The Feeling Brain

2011 Teenage Brain

2012 View from the Center of the Universe

2013 The Advent of Us: How We Became Human